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EXAMINER

LOPEZ, FRANK D

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAZUNORI YOSHINO

Appeal 2008-005040
Application 10/029,290
Technology Center 3700

Decided: October 13, 2009

Before LINDA E. HORNER, JOHN C. KERINS, and STEVEN D.A.
McCARTHY, *Administrative Patent Judges*.

KERINS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Kazunori Yoshino (Appellant) seeks our review under 35 U.S.C. § 134 of the Examiner's final rejection of claims 1, 4, 5, 7, 9, 10, 12-16 and 21, the only claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM.

THE INVENTION

Appellant's claimed invention is to a hydraulic fluid control system for reducing motor cavitation by providing first and second flow lines in parallel, with at least one of the first and second flow lines being configured to provide make-up fluid to the motor. (Appeal Br., Claims Appendix, Claims 1, 15). Independent claim 1, reproduced below, is representative of the overall claimed subject matter:

1. A fluid control system comprising:

at least one double-acting cylinder;

at least one fluid-driven motor;

a pressurized fluid source configured to supply pressurized fluid flow to the at least one double-acting cylinder and the at least one fluid-driven motor;

a tank configured to receive return fluid flow from the at least one double-acting cylinder via a cylinder return line and the at least one fluid-driven motor via a motor return line;

a back pressure element disposed between the tank and the motor, the back pressure element being configured to influence a fluid backpressure condition on fluid discharged from the motor;

a combination main relief and by-pass valve disposed at a first flow line, the first flow line being configured to provide fluid communication between the source of pressurized fluid and the motor return flow line;

a pilot pump configured to provide a pilot flow of fluid; and

a pilot relief valve disposed at a second flow line, the second flow line being configured to provide fluid communication between the pilot pump and the motor return flow line in parallel with the first flow line,

wherein at least one of the first and second flow lines is configured to provide make-up fluid to the motor.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Krusche	US 4,665,699	May 19, 1987
Yoshimatsu	US 5,062,266	Nov. 5, 1991
Yoshimatsu	US 5,063,742	Nov. 12, 1991
Chung	US 5,673,605	Oct. 7, 1997

The Examiner has rejected:

(i) claims 1, 4, 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Yoshimatsu ‘742 in view of Krusche and Yoshimatsu ‘266; and

(ii) claims 5, 7, 9, 10, 12-14 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Yoshimatsu ‘742 in view of Krusche, Yoshimatsu ‘266, Chung, and “a further teaching of Krusche”.¹

ISSUE

The Examiner found that it would have been obvious to modify the hydraulic fluid system of Yoshimatsu ‘742 to connect its second flow line to its motor return flow line, as taught by Krusche, to simplify the layout of the system, and to employ a combination relief and bypass valve, as taught in Yoshimatsu ‘266, in place of the main relief valve, in order to allow the pressure source to be unloaded when not needed to provide pressurized fluid.

Appellant contends that the Examiner’s reason to combine Krusche with Yoshimatsu ‘742 is not supported by the references themselves, and that the proposed modification of the main relief valve to a combination

¹ The Examiner’s Answer contends that this is a non-withdrawn ground of rejection that is not under review on appeal because Appellant has presented arguments directed only to limitations appearing in the claims rejected in group (i) above. (Answer 2-3). The Appeal Brief expressly states that this ground of rejection is on appeal, and presents Appellant’s position as to why that rejection is in error, albeit that position is based upon alleged error in the rejection of the claims in group (i), and that the Chung patent does not remedy the alleged deficiencies in that rejection. (Appeal Br. 17-18). Notwithstanding that Appellant has not argued that certain limitations appearing in the claims in group (ii) render those claims separately patentable, the ground of rejection is presented for decision on appeal.

relief and bypass valve would change the principle of operation of the Yoshimatsu '742 system.

The issue to be decided on appeal is whether Appellant has demonstrated that the Examiner erred in combining the references in reaching the conclusion that the claimed invention would have been obvious.

FINDINGS OF FACT

The following enumerated findings of fact (FF) are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

FF 1. Appellant does not contest the Examiner's findings that:

- (a) Yoshimatsu '742 discloses all elements set forth in claim 1, including a pilot relief valve disposed in a second flow line, with the exception that the second flow line is not configured to provide fluid communication between the pilot pump and a motor return flow line in parallel with a first flow line; and with the exception that the main relief valve is not a combination relief and by-pass valve;
- (b) Krusche discloses a hydraulic control system in which a pilot pump provides fluid across a pilot relief valve disposed in a second flow line, and that the second flow line is connected to the motor return flow line; and

(c) Yoshimatsu ‘266 discloses a hydraulic fluid control system that, *inter alia*, has a main relief valve that is a combination relief valve and bypass valve, the bypass valve function being provided for the purpose of allowing the pressure source to be unloaded when not needed to provide pressurized fluid. (Answer 3-5).

FF 2. Yoshimatsu ‘742 discloses, in Figure 5, an embodiment having an electrical control means that enhances the response speed and reliability of the hydraulic control circuit. (Yoshimatsu ‘742, Fig. 5; col. 10, l. 62-col. 11, l. 12).

PRINCIPLES OF LAW

An appellant has the burden on appeal to the Board to demonstrate error in the Examiner’s position. *See Ex parte Yamaguchi*, 88 USPQ2d 1606, 1614 (BPAI 2008) (on appeal, applicant must show examiner erred); *Ex parte Fu*, 89 USPQ2d 1115, 1123 (BPAI 2008); *Ex parte Catan*, 83 USPQ2d 1569, 1577 (BPAI 2007); and *Ex parte Smith*, 83 USPQ2d 1509, 1519 (BPAI 2007). *See also In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (“On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.”) (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007) (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”).

ANALYSIS

Claims 1, 4, 15 and 16--Obviousness over Yoshimatsu ‘742 in view of Krusche and Yoshimatsu ‘266

Appellant argues for the patentability of claims 1, 4, 15 and 16 as a group. Claim 1 will be taken as being representative of the group, and the remaining claims will stand or fall with claim 1.

The Examiner found that:

- (a) Yoshimatsu ‘742 discloses all elements set forth in claim 1, including a pilot relief valve disposed in a second flow line, with the exception that the second flow line is not configured to provide fluid communication between the pilot pump and a motor return flow line in parallel with a first flow line; and with the exception that the

main relief valve is not a combination relief and by-pass valve;

(b) Krusche discloses a hydraulic control system in which a pilot pump provides fluid across a pilot relief valve disposed in a second flow line, and that the second flow line is connected to the motor return flow line; and

(c) Yoshimatsu '266 discloses a hydraulic fluid control system that, *inter alia*, has a main relief valve that is a combination relief valve and bypass valve, the bypass valve function being provided for the purpose of allowing the pressure source to be unloaded when not needed to provide pressurized fluid.

Appellant does not contest these findings. (FF 1). The Examiner concluded that it would have been obvious to modify the system disclosed in Yoshimatsu '742 to have the second flow line connected to the motor return flow line, in view of the teachings of Krusche, and to make the main return valve of Yoshimatsu '742 a combination relief and bypass valve, in view of the teachings of Yoshimatsu '266. (Answer 4-5). Appellant does not argue that the combined teachings fail to meet any of the claim limitations. Rather, Appellant argues only that the Examiner improperly combined the teachings of both Krusche and Yoshimatsu '266 with the teachings of Yoshimatsu '742 in arriving at the conclusion of obviousness. (Appeal Br., *passim*; Reply Br., *passim*).

The Examiner asserts that the connection between the pilot relief valve and the tank in the Yoshimatsu '742 patent and in the Krusche patent are “functionally equivalent”, and that it therefore would have been obvious to modify the Yoshimatsu '742 system to connect the second flow line disclosed therein to the motor return flow line, in view of the teachings of Krusche, “as a matter of engineering expediency.” (Answer 4-5). The Examiner further explains this position in the “Response to Argument” section of the Answer. There, the Examiner notes that when the physical layout of the system results in the pilot pressure relief valve being physically positioned remotely from the fluid tank, instead of running both the second flow line and the motor return flow line to the fluid tank, it is simpler to join the second flow line to the motor return flow line, and run only one line to the fluid tank. (Answer 7). The Examiner asserts that this is what the Krusche system is showing.

Appellant counters that there is no suggestion to modify the Yoshimatsu '742 system because nothing in the record supports the Examiner's allegation of functional equivalence between Yoshimatsu '742 and Krusche, and because the Examiner's proffered reason to combine the teachings of the two references is not supported by those teachings.

Since the Examiner has elucidated a reason to combine the teachings of Yoshimatsu '742 and Krusche, the issue as to whether the Examiner has properly established that the two pilot relief valve/tank discharge systems are functionally equivalent is of relatively little or no significance. In *KSR*, the Supreme Court instructed that a legal conclusion of obviousness is to be assessed on the basis of whether there is an apparent reason to combine the teachings of the references, and that this should be expressed and supported

with some articulated reasoning having some rational underpinning. *KSR Int'l.*, 550 U.S. at 418.

The Examiner's conclusion is founded on the assertion that it would have been obvious to connect the second flow line having the pilot relief valve disposed therein to the motor return flow line, in order to simplify the system's physical layout. Appellant responds that Krusche fails to mention any reason to connect the second flow line to the motor return flow line, and that the Yoshimatsu '742 and Krusche references do not support the Examiner's position. (Reply Br. 4-5).

That Krusche does not mention why the system therein has the second flow line connected to the motor return flow line has little to no probative value. The proper analysis or test is what a person of ordinary skill in the art would glean from the reference. The Examiner takes the position that Krusche shows that the joining of these lines results in a simpler system configuration. Appellant argues in reply that:

it may not be "simpler" to connect the ... "second flow line" of Yoshimatsu '742 to the motor return flow line, since such connection may necessitate a more complex control of the Yoshimatsu '742 hydraulic system.

For example, by virtue of Appellant's second flow line being connected to the motor return flow line, Appellant's system is more complex than if the second flow line were connected directly to the tank. ... In fact, Appellant's second flow line is configured to provide a make-up fluid to a motor, a function of the pilot pump and pilot relief valve that is not disclosed in either Yoshimatsu '742 or Krusche.

(Reply Br. 5).

The equivocation expressed in the former argument is far from persuasive that the Examiner's contention is in error. The latter argument is misdirected, firstly in that it misapprehends how the Examiner proposes to modify the Yoshimatsu '742 system, and secondly in that it seeks to establish that the proposed modification would lead to a more complex system by making reference to an embodiment of Appellant's system that is narrower than the scope of claim 1 under consideration.

The Examiner does not propose that the Yoshimatsu '742 system be modified such that the second flow line will be not only connected to the motor return flow line, but also configured to provide a make-up fluid to a motor. Claim 1 is not so limited; it requires only that one ("at least one") of the first and second flow lines be configured to provide make-up fluid to the motor. (Appeal Br., Claims Appendix, Claim 1). The Examiner specifically notes that the proposed modification to Yoshimatsu '742 would have the second flow line connected to the motor return flow line between the main relief valve and the tank. (Answer 5). The Examiner further points out that the second flow line is not claimed as being connected before or after the back pressure element, and, as noted immediately above, claim 1 does not require that the second flow line be configured to provide make-up fluid to the motor. (Answer 8). It is those unclaimed features of Appellant's system that might potentially lead to the modified Yoshimatsu '742 system being more complex, as asserted by Appellant.

Appellant's challenge to the combining of the teachings of Yoshimatsu '266 with the teachings of Yoshimatsu '742 also falls short. Appellant contends that the Examiner relies solely on an assertion that the two references are in the same field of endeavor, such that the purpose

disclosed in Yoshimatsu ‘266 would have been recognized in the pertinent art of Yoshimatsu ‘742. (Appeal Br. 14). Appellant then asserts that neither of the references “provides any suggestion of a desirability of making the Examiner’s proposed, hypothetical modification”, and “[f]or at least that reason, there is no legally sufficient suggestion or motivation to make the [modification]”. Considering that Appellant has essentially ignored the Examiner’s stated reason to combine the teachings, Appellant appears to be arguing that an explicit suggestion or motivation must be found *within the references themselves* in order to establish a legally sufficient prima facie case of obviousness.

Citation to an explicit teaching, suggestion and motivation (TSM) from within the references themselves was not required even before the Supreme Court in *KSR* ruled that a rigid application of the TSM test was erroneous as being inconsistent with its prior precedent. *See In re Baird*, 16 F.3d 380 (Fed. Cir. 1994) (what a reference teaches, and what it suggests, are two different inquiries); *WMS Gaming Inc. v. International Gaming Technology*, 184 F.3d 1339 (Fed. Cir. 1999) (suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved). The decision in *KSR* makes it clear that a rigid adherence to a TSM test is inconsistent with Supreme Court precedent, and that a conclusion of obviousness based upon a combination of references is to be founded on an apparent reason to combine the teachings, preferably expressed in the form of an explicit analysis containing articulated reasoning with some rational underpinning. *KSR*, 550 U.S. at 418.

Here, the Examiner finds that Yoshimatsu '742 and Yoshimatsu '266 are both from the same field of endeavor, based on specific findings relative to the constructional and functional details of the disclosures of these references, and concludes that it would have been obvious to make the main relief valve in Yoshimatsu '742 a combination relief and bypass valve, as disclosed in Yoshimatsu '266, for the purpose of being able to unload the pressure source when it is not needed for providing pressurized fluid. (Answer 5). Appellant does not directly contest the findings or that the reason to combine as set forth by the Examiner is flawed in any manner.

Appellant further argues that the combination of Yoshimatsu '266 with Yoshimatsu '742 is improper because the modification proposed in view of the combined teachings would change the principle of operation of the Yoshimatsu '742 system. (Appeal Br. 15). Specifically, Appellant contends that the hydraulic control system of Yoshimatsu '742 is a purely mechanical control system, whereas Yoshimatsu '266 employs an electronic controller to control, *inter alia*, an electromagnetic selector valve that is part of the main relief valve. (Appeal Br. 15-16). In short, Appellant contends that if the Examiner's proposed modification were adopted, "the Yoshimatsu '742 system's principle of operation would need to be changed from mechanical control to electronic control...". (Appeal Br. 16).

The Examiner points out, in response, that the Yoshimatsu '742 patent discloses an embodiment (Fig. 5 therein) in which electronic control is employed, and that that embodiment is otherwise essentially identical to the embodiment shown in Figure 3 (the embodiment principally relied on by the Examiner), which employs purely mechanical control. (Answer 9). The Examiner asserts that this disclosure provides motivation to make the

combination, or, alternatively, the combination of the electronically-controlled relief valve of Yoshimatsu '266 with the Figure 5 embodiment of Yoshimatsu '742 would involve no change in the principle of operation of that embodiment. (*Id.*). We note that Yoshimatsu '742 states that the electrical control means in the Figure 5 embodiment enhances the response speed and reliability of the hydraulic control circuit. (FF 2).

Even if we accept Appellant's contention that the Examiner's proposed modification would require a change from mechanical control to electrical control, that does not amount to a change in the principle of operation of the Yoshimatsu '742 hydraulic system. Rather, it amounts to simply a substitution of one known control technique for another known control technique for controlling a main relief valve and other components of the hydraulic system. Yoshimatsu '742, in disclosing both mechanical and electrical control systems for essentially the same hydraulic system, plainly evidences that the implementation of either of these types of control systems is well within the level of skill in the art.

Appellant has failed to persuade us of error in the Examiner's conclusion that the subject matter of claim 1 would have been obvious to a person of ordinary skill in the art. We will sustain the rejection of claim 1, as well as the rejection of claims 4, 15 and 16, which will fall with claim 1.

Claims 5, 7, 9, 10, 12-14 and 21--Obviousness over Yoshimatsu '742 in view of Krusche, Yoshimatsu '266, and Chung

Appellant relies solely on the arguments for patentability advanced with respect to the alleged nonobviousness of claims 1, 4, 15 and 16 over Yoshimatsu '742, Krusche and Yoshimatsu '266. Appellant further contends that the teachings of Chung do not overcome the alleged

deficiencies of these references in rendering obvious the claimed subject matter. For the same reasons as set forth above, we will sustain this rejection.

CONCLUSIONS

Appellant has not established that the Examiner erred in rejecting claims 1, 4, 15, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Yoshimatsu '742, Krusche, and Yoshimatsu '266. Appellant also has not established that the Examiner erred in rejecting claims 5, 7, 9, 10, 12-14 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Yoshimatsu '742, Krusche, Yoshimatsu '266 and Chung.

ORDER

The decision of the Examiner to reject claims 1, 4, 5, 7, 9, 10, 12-16 and 21 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

Appeal 2008-005040
Application 10/029,290

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